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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,456	12/31/2003	J. Nelson Wright	341148019US	4971

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EXAMINER

TALMAN, JAMES R

ART UNIT	PAPER NUMBER
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3737

MAIL DATE	DELIVERY MODE
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08/09/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/750,456

Applicant(s)

WRIGHT ET AL.

Examiner

James R. Talman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
- Paper No(s)/Mail Date 8/28/2006; 11/17/2006.

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

In the abstract, "marker is implanted" should be changed to --marker that is implanted--.

On page 23, line 1, the square symbol should be changed to a numeric value.

Appropriate correction is required.

Drawings

2. The drawings are objected to because of the following minor informality:

In Figure 3A, element "330" should be changed to --330a--.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency.

Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the

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applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 18-20 are objected to because of the following informalities:

In claims 18-20, the "2" should be changed to --12--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 3, 6-12, 14, 17-21, 23, 25, 26-29, 31, 34-42, 44, and 46-49 are rejected under 35 U.S.C. 102(e) as being anticipated by Sodickson et al (US Patent Application Publication US 2006/0125475).

As per claims 1, 12, 21, 26, 29, 42, and 47, Sodickson et al discloses calibration of a sensing array (array of resonant coils, see abstract), the sensing array including a plurality of sensing elements (Figures 4A-B), the method comprising: applying an excitation to at least one of said plurality of sensing elements of said sensing array (a

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pulse may be applied at the input of one of the coils, paragraph 104); analyzing the output of some or all of said plurality of sensing elements resulting from said excitation (calibrate coil array, 500); repeating said excitation and analyzing process for each of said plurality of sensing elements (This process may be repeated...each of the coils in the array, paragraph 104); determining corrections to a sensed signal based upon said analyzed outputs of said plurality of sensing elements (Compare trial impedance matrix with measured impedance matrix, 540; Converged, 560).

As per claims 3, 14, 23, 31, and 44, Sodickson further discloses applying corrections to the array outputs (Figure 7; compare measured and computed impedance matrices, 740) during marker localization (imaging).

As per claims 7-10, 17, 18, 25, 34, 35, 46, Sodickson further discloses sinusoidal excitation (a chirp containing a range of frequencies, paragraph 104; nominal resonant frequency, paragraph 122), excited by a voltage or a current (voltage or current source, paragraph 104).

As per claims 11, 20, 28, 37, and 49, Sodickson further discloses a series of iterations comparing calibration values with measured values (Figures 5 and 11) and repeating measurements as the distance changes (Distance too great decision box in Figure 11).

As per claim 6, Sodickson et al further discloses exciting less than all of the coils (blocking networks, paragraph 115).

As per claims 19, 27, 36, and 48, Sodickson et al further discloses excitation of more than one element simultaneously (Measurement equipment may be coupled to one or more of the matching circuits, paragraph 117).

As per claims 38-41, Sodickson et al inherently corrects for noise in the measurements by continually updating the model based on measured values (1160, 1170, see also Figure 11) because the effect of noise on the model will be reduced over a series of updates.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2, 4, 5, 13, 15, 16, 22, 24, 30, 32, 33, 43, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sodickson et al (US Patent Application Publication US 2006/0125475) in view of Johnson et al (US6005916).

As per claims 2, 4, 5, 13, 15, 16, 22, 24, 30, 32, 33, 43, and 45, as discussed above, Sodickson et al discloses all the elements of the claimed invention except that it does not explicitly disclose a preamplifier or a differential amplifier associated with each sensor. Solving the same problem (calibration of sensor arrays), Johnson et al discloses preamplifiers (136) and differential amplifiers (552q) associated with each element. It would have been obvious to a person having ordinary skill in the art at the

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time the invention was made to use preamplifiers in the form of differential amplifiers in the invention of Sodickson et al because they provide lower noise operation and immunity from undesirable capacitive coupling between channels. Furthermore, the number of amplification elements within the differential amplifier is an obvious design choice and is not given patentable weight since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and is listed on the attached reference sheet.

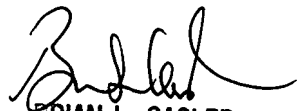
Any inquiry concerning this communication or earlier communications from the examiner should be directed to James R. Talman whose telephone number is 571-270-3029. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

James R Talman
Examiner
Art Unit 3737

Jrt


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